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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

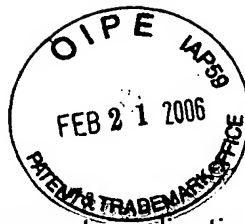
INVENTOR(S) : Lalit K. Mestha, et al.
TITLE : **MODEL BASED DETECTION AND
COMPENSATION OF GLITCHES IN
COLOR MEASUREMENT SYSTEMS**
APPLICATION NO. : 10/000,379
FILED : October 31, 2001
CONFIRMATION NO. : 9053
EXAMINER : George R. Koch
ART UNIT : 1734
LAST OFFICE ACTION : November 3, 2005
ATTORNEY DOCKET NO. : A1097-US-NP
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Applicants request review of the Final Rejection in the above-identified application. No amendments are being filed with this request. This request is being filed with a Notice of Appeal. The review is requested for the reasons stated on the following 5 sheets.



The Examining Group

It is noted that the present application is being examined in Art Group 1734: Chemical and Materials Engineering – Adhesive Bonding and Coating Apparatus. It is also noted that the application is relatively unrelated to chemicals, materials, adhesive bonding or coating apparatus therefor. Even if a printer is considered to be an adhesive coating apparatus, the present application is related to printers only in that the systems and methods of the application can be applied to sensing systems that might be included in or associated with a printer.

The Present Application

The present application is directed toward systems and methods for detecting glitches or transient errors in color **measurement signals** and, when such glitches are detected, **temporarily replacing** the erroneous signal with a reasonable replacement signal so that system stability can be maintained.

The Cited References

In contrast, the cited references are unrelated to measurement error detection or temporarily replacing a measured signal with a reasonable substitute.

Instead, Wolf discloses a method and apparatus for periodically upgrading the calibration of printer or other display device.

In the system of Wolf, initially, a fairly large number of colors are printed and measured. From this information, a color correction is determined and stored in a high-density compensator (MAPP 1 (80)). Additionally, a small number of color patch samples are printed and measured at regular intervals during the use of the printing machine. This low-density information which is periodically updated compensates (MAPP 2 (no reference numeral provided, see FIG. 1)) for slow drift. The periodic updating involves making measurements with a densitometer/spectrophotometer 70 (column 2, lines 42-53; claims 1, 4 and 6; column 6, lines 3-15 and 27-33).

In this regard, it is respectfully submitted that the assertions of the Office Action appear to be based on a misunderstanding of Wolf, a misunderstanding of the present application or both. For example, while the present application is directed toward errors in a **measurement system** or sensor, the Office Action makes reference to portions of Wolf that discuss drifts in calibrations associated with a printer 50. While FIG. 1 depicts a signal from the sensor 70 delivered to the MAPP 2, that signal is not processed by or

replaced by the MAPP 2. Instead, the signal from the sensor is used to periodically update transformation equations or tables within the MAPP 2 (column 6, lines 3-15 and 27-33). During normal operation, the MAPP 2 receives color data from the document creator 10 ($R_c G_c B_c$) and transforms that color data into values associated with a device independent color space ($L_c^* A_c^* B_c^*$) (column 6, lines 16-26). The signal from the densitometer/spectrophotometer 70 is not processed or replaced by the MAPP 2. The MAPP 2 does not detect glitches or transient errors in a **measurement system** or the sensor 70. Instead, the MAPP 2 provides a compensation for drifts associated with the printer 50 (column 2, lines 1-11; column 5, lines 19-38).

The secondary references do not correct the deficiencies of Wolf.

Stokes allegedly discloses a method and system for automatic characterization of a color printer.

Balasubramanian discloses refinement of printer transformations using weighted regression.

The Claims are not Anticipated

Claims 1-3 were rejected under 35 U.S.C. 102(e) and/or 102(a) as being anticipated by Wolf. However, **claim 1** recites:

A method of processing **transient errors produced in a color measurement system** monitoring a color producing process, the method comprising:

implementing a model of the color producing process;

monitoring an input to the color producing process;

predicting an expected color signal based on the model and the monitored input;

measuring an output color produced by the color producing process to produce a measured color signal;

comparing the measured color signal to the expected color signal to produce a color error value, and;

selectively replacing the measured color signal based on the color error value.

It is respectfully submitted that Wolf does not disclose or suggest a method of processing transient errors produced in a color measurement system monitoring a

color-producing process. Moreover, Wolf does not disclose or suggest comparing a measured signal to an expected color signal to produce a color error value or selectively replacing a measured color signal based on the color error value. In this regard, it is respectfully submitted that the assertions of the Office Action are inaccurate. For example, page 2 of the Office Action identifies the outputs of MAPP 1 and MAPP 2 as predictions of expected colors. However, the outputs of MAPP 1 and MAPP 2 are not predictions of expected colors. Instead, they are translations, mappings or transformations or partial mappings or transformations of color data from a document creator **10** (column 3, lines 41-62) into color descriptions useful for image processing (**20, 30, 40**) tailored for the printer **50** (column 5, lines 60-61, and column 6, lines 3-5). Additionally, claim 1 recites predicting an expected color signal.

Even if one or more of the outputs of MAPP 1 and MAPP 2 is construed to be an expected color signal, Wolf does not disclose or suggest comparing a measured color signal (e.g., the signal from densitometer/spectrophotometer **70**) to either the output of MAPP 1 or the output of MAPP 2. In support of the assertion to the contrary, the Office Action directs the attention of the Applicants to MAPP 2 and appears to assert that MAPP 2 performs a comparison between the document signal (from the document creator **10**) and the measured signal (from the sensor **70**). However, as explained above, MAPP 2 does not compare the color data from the document creator **10** to the signal from the sensor **70**. Instead, MAPP 2 maps or transforms the color data ($R_cG_cB_c$) to a device independent color space ($L^*a^*b^*$ (see FIG. 1, column 5, line 60 – column 6, line 10).

From time to time, the sensor **70** is used to update the MAPP 2. It is respectfully submitted that during calibration in the system of Wolf, the information from the sensor **70** is assumed to be correct. The sensor signal is used to update values in the MAPP 2. However, the signal itself is not replaced with a substitute signal. Indeed, in Wolf, the signal from the sensor **70** is not even tested (i.e., compared to an expected color signal) to determine if the signal from the sensor is reasonable (i.e., is associated with a reasonable color error value).

Additionally, as indicated above, the output of the MAPP 2 does not represent a difference for comparison between the data from the document creator **10** and the signal from the sensor **70**. Instead, the output of the MAPP 2 is a partial mapping or transformation of the data from the document creator to a color space used by the MAPP 1.

Wolf does not disclose or suggest selectively replacing the measured color signal based on the color error. In this regard, the Office Action makes some assertions with regard to the output of MAPP 1 being turned into a densitometer signal which is fed into MAPP 2. However, even if this assertion is correct, disclosure of a sensor measuring a color produced by the printer 50 based on an output from MAPP 1 does not disclose or suggest replacing that measurement based on an error or difference between that measurement and a predicted measurement.

For at least the foregoing reasons, the rejection of **claim 1**, as well as **claims 2-5**, is based on errors in fact and pre-appeal review is respectfully requested.

Additionally, **claim 2** recites that selectively replacing the measured color signal comprises replacing the measured color signal with a predicted color signal based on the expected color signal. Since Wolf does not disclose or suggest replacing the signal from the sensor 70, Wolf cannot disclose or suggest replacing the measured color signal with a predicted color signal or a predicted color signal based on the expected color signal. In this regard, the Office Action directs the attention of the Applicants generally to all of column 4. A more precise citation or more specific explanation is respectfully requested. In any event, the Applicants have carefully reviewed column 4 and have found no disclosure or suggestion of replacing the signal from the sensor 70 (i.e., a measured color signal) with a **predicted color signal** or any other signal based on an **expected color signal** or otherwise.

For at least the foregoing additional reasons, the rejection of **claim 2** is based on error and pre-appeal review is respectfully requested.

It is respectfully submitted that for there to be anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention. It is respectfully submitted that Wolf simply does not disclose every aspect recited in claim 1. Most clearly, **Wolf does not disclose or suggest selectively replacing a measured signal** (with some other signal) based on a value of a color error. For example, please compare FIG. 1 of Wolf with FIGS. 3 and 4 of the present application. FIGS. 3 and 4 include best value selection algorithms (336, 436) that select either a signal (356, 456) from a color sensor (324, 424) or a signal (352, 452) from another source such as a model (328, 428), to be delivered (368, 468) to a controller (316, 416) based on a color error value (360, 460). There is simply no analogous structure or function disclosed or suggested in Wolf. Therefore, the rejections of **claims 1-5** are based on errors of fact and pre-appeal review is respectfully requested.

Review of the Restriction Requirement is Also Requested

It is respectfully submitted that for at least the reasons outlined in the Response to Restriction Requirement and Preliminary Amendment mailed March 23, 2004, the Restriction Requirement, at least with regard to Groups I and III is based on error. Therefore, withdrawal of the restriction requirement and reinstatement of at least **claims 11-19** is respectfully requested.

Conclusion

For at least the reasons detailed above, Pre-Appeal Brief Review is respectfully requested. In the event personal contact is considered advantageous to the disposition of this case, please telephone the undersigned at the listed number.

Respectfully submitted,

FAY, SHARPE, FAGAN,
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2/15/06
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